

- 11 -

Claims

1. A self-routing communication network, comprising:
a plurality of nodes;
a plurality of star couplers each having a plurality of inputs and a plurality of outputs; and
communication paths coupled between the plurality of star couplers and the plurality of nodes for communication therebetween of frames of information, wherein
the communication paths include at least one alternative communication path, and
the star couplers each include means for sensing if one of its inputs first receives a frame of information and for passing only the frame of information first received.
2. The self-routing communication network of claim 1, wherein the frames of information each have a frame-start-sequence, and the star couplers further each include means for changing the frame-start-sequence before outputting the frame such that an interconnection failure may be diagnosed by analysing the frame-start-sequence.
3. The self-routing communication network of claim 2, wherein the means for changing the frame-start-sequence comprises means for reducing the size of the frame-start-sequence by a predetermined amount.

BEST AVAILABLE COPY

- 12 -

4. The self-routing communication network of claim 3, wherein the predetermined amount comprises 2 bits.

5. The self-routing communication network of claim 3 or 4, wherein the means for reducing the size of the frame-start-sequence comprise clock means for timing the occurrence of the predetermined amount of the frame-start-sequence.

6. The self-routing communication network of claim 3 or 4, wherein the means for reducing the size of the frame-start-sequence comprise bit detection means for detecting the occurrence of the predetermined amount of the frame-start-sequence.

7. The self-routing communication network of any preceding claim, wherein the network is based on a deterministic media access scheme.

8. The self-routing communication network of any preceding claim, wherein the network is arranged for real-time communication.

BEST AVAILABLE COPY

- 13 -

9. A star coupler for use in a self-routing communication network having a plurality of nodes coupled via communication paths and a plurality of star couplers for communication between the nodes of frames of information,

the star coupler having a plurality of inputs and a plurality of outputs,

wherein

the star coupler includes means for sensing which of its inputs first receives a frame of information and for passing only the frame of information first received, and the frames of information each have a frame-start-sequence, and the star coupler further includes means for changing the frame-start-sequence in a predetermined manner before outputting the frame of information, whereby interconnection failure in the network may be diagnosed by analysing from the frame-start-sequence.

10. The star coupler of claim 9, wherein the means for changing the frame-start-sequence in a predetermined manner comprises means for reducing the size of the frame-start-sequence by a predetermined amount.

11. The star coupler of claim 10, wherein the predetermined amount comprises 2 bits.

12. The star coupler of claim 10 or 11, wherein the means for reducing the size of the frame-start-sequence comprise clock means for timing the occurrence of the predetermined amount of the frame-start-sequence.

BEST AVAILABLE COPY

- 14 -

13. The star coupler of claim 10 or 11, wherein the means for reducing the size of the frame-start-sequence comprise bit detection means for detecting the occurrence of the predetermined amount of the frame-start-sequence.

14. The star coupler of any one of claims 9-13, wherein the network is based on a deterministic media access scheme.

15. The star coupler of any one of claims 9-14, wherein the network is arranged for real-time communication.

BEST AVAILABLE COPY